

REMARKS

Claims 1-17 are present in the application. Claims 8-9 and 11-16 are withdrawn from consideration as being directed to non-elected species.

Claims 1, 4, 5, 7-9 and 14-16 are rewritten to correct "projectile" to "projectile assembly," etc. Independent Claims 1 and 5 are further amended to require that the control means is "electrical."

With regard to the Information Disclosure Statement, an additional Information Disclosure Statement is filed herewith which identifies only the Abstract of JP 6 194,095.

With regard to priority document PCT/AU94/00124, Applicant notes that the PCT Application, entered the national phase as Serial No. 08/525,705 and is now U.S. 5,883,329. Accordingly, no certified copy thereof is required.

The specification is objected to as failing to provide an antecedent basis for the claimed subject matter. In particular, the Examiner alleges that the written specification directed to the FIG. 5 embodiment lacks support for the language of Claims 5, 7 and 10.

Clearly it was not Applicant's intention that FIG. 5 be interpreted only in light of the 8 lines of the single paragraph (page 10, lines 11-18) commencing "in the embodiment of FIG. 5" For example, preceding this paragraph is another (page 9, line 29 - page 10, line 22) "referring to the embodiments of FIGS. 4 to 10." Thus, at the very least, to the extent applicable, the description of FIGS. 4-10 (page 9, line 29 - page 11, line 30) are to be interpreted *in pari materia* with the paragraph directed exclusively to the FIG. 5 embodiment. Further, the entire SUMMARY OF THE INVENTION section (page 1, line 31 - page 6, line 19) makes no reference to any figure and thus, to the extent applicable, bears on the appropriate description for FIG. 5.

With regard to the language of Claim 5 ("an internal wedging surface, at or adjacent a trailing edge of said cylindrical extension which accommodates a tapered nose part of the following projectile"), Applicant refers the Examiner to specification page 2, lines 32-33; page 5, lines 6-13; and, more specifically, page 10, line 29 - page 11, line 5, wherein the wedging surface on the spacer assembly 28 is described. With regard to the language of Claim 7 ("propellant charges surround the nose of respective following projectiles externally of the trailing cylinder extension"), Applicant refers the Examiner to page 3, lines 10-11, and to the speckling 16 about the nose of the second projectile 14 in FIG. 5, the speckling 16 having been previously described with respect to FIG. 1 as "discrete propellant charges disposed between adjacent projectile assemblies 14 for propelling the respective projectile assemblies 14" (page 8, lines 11-12). Finally, with regard to the language of Claim 10 ("the trailing cylindrical extension is a thin cylindrical rear extension of the projectile head"), Applicant refers the Examiner to page 2, lines 9-12, and, more specifically, to page 3, lines 21-24 as well as FIG. 5 itself, which shows the "thin cylindrical rear extension of the projectile head" 26. It is clearly relatively thin since it must accommodate the projectile charges 16 and internal spacer 27 therewithin.

The Examiner further objects to the term "thin" in Claim 10 as being relative and rendering the claim indefinite. Applicant respectfully submits that FIG. 5 shows how "thin" the cylindrical rear extension is relative to the projectile head. In more absolute terms, the thickness could presumably be calculated, by way of example, from the barrel outside diameter of 20 mm and the combined propelling charge/projectile assembly length of 50 mm, as set forth at page 9, lines 6-8.

Claims 1-7 and 10 are rejected as anticipated by Tauschek U.S. 2,313,030. The Examiner lists specific structural elements of the Tauschek device as if the mere presence of a structural element were sufficient to anticipate. Thus the Examiner ignores the requirement of Claim 1 that the plurality of projectile assemblies must be axially disposed in end-to-end abutting relationship with the barrel "for operative sealing engagement with the bore of the barrel." Applicant respectfully submits that FIG. 3 clearly shows that elements 9 are merely positioning ribs, and that there is a gap between the bore of the barrel and the projectile assembly. It will be appreciated that while the insulating and packing ring 6 provides at most a sealing engagement between one projectile and the barrel, it does not enable each projectile to make a sealing engagement with the barrel. Thus, any operative sealing contact is achieved by virtue of the insulating and packing ring 6, not by virtue of an expanded cylindrical spacer portion. For the record, Applicant notes that the guide-collar 21 is provided in Tauschek only to engage the spiral grooves of the barrel (col. 2, lines 8-10), and not to make any sealing contact.

Similarly, while the Examiner does note "sealing contact" by reference to elements 15 and 16, Claim 3 requires "sealing contact with said bore of the barrel," and the extensions 15, 16 shown in FIGS. 4 and 5 merely provide sealing contact between adjacent projectile assemblies.

Finally, while the Examiner does note "structural reenforcement" by element 18, Claim 4 requires a structural reenforcement of the interior of the cylindrical space portion to prevent excessive radial expansion of the projectile. However, Tauschek element 18 referenced by the Examiner is simply a cardboard sleeve selected for its

electrically insulative properties to interconnect two adjacent projectiles and isolate the bridging wire 19, as illustrated in FIG. 4. It could not prevent radical expansion of the projectile.

Applicant also questions whether the control means equated by the Examiner with Tauschek elements 22, 23 truly acts as means for "selectively and sequentially actuating the ignition means." In Tauschek, the projectile must be brought into alignment with screw 3. Thus the projectile must be advanced to the point where it makes electrical contact with the barrel and thus can be energized by the actuated ignition means. In another words, the projectile train must be advanced so that the next projectile is fed into its firing position. By way of contrast, the present invention allows successive projectiles to be actuated without any movement of the projectile train.

Claims 1-6 and 10 are rejected as unpatentable over Tauschek U.S. 2,099,993 in view of Tauschek '030.

The Tauschek '993 Patent is subject to many of the same objections made above with regard to the Tauschek '030 Patent, as follow:

(a) There is no operative sealing engagement between the barrel 13', 13" and each of the plurality of projectiles 4 as claimed in independent Claims 1 and 5. Rather, the rifle of Tauschek FIG. 15 uses an asbestos washer 43 to seal the breach end of the barrel (page 6, col. 2, lines 23-26).

(b) There is no operative sealing engagement of the integral cylindrical space portion 4f, as shown in FIG. 15, with the bore of the barrel 13', 13", as required by new Claim 17. Rather the rear end of the cylindrical portion is shaped to fit tightly around the nose of the next projectile (page 2, col. 2, lines 31-35). By way of contrast, the

present invention expressly requires that the "spacer assembly 28 supports a thin cylindrical rear portion 30 of projectile head 26 in operative sealing contact with the bore of barrel 12" (page 10, lines 23-27).

(c) The structural reinforcement 7" identified by the Examiner is merely a retaining disc of cardboard which is generally in contact with the nose 4e of the next projectile assembly and cannot possibly function to reinforce the projectile body against expansion. Such a cardboard disc cannot "structurally [reinforce] to prevent excessive radial expansion of the projectile assembly," as required by Claim 4.

Accordingly, the combination of the two Tauschek documents fails to provide even a hypothetical construct which meets the requirements of Applicant's claims.

Further, as set forth in the specification (page 4, line 30) and exemplified by the electronic control 20 described in the specification (page 8, line 29), Applicant's control means is "electrical" in nature. Such an electronic control means is advantageous relative to the mechanical control means of the prior art for the reasons set forth in the specification (page 1, lines 19-24). The Examiner's suggestion that the exclusively mechanical design of the '993 Tauschek Patent be totally and radically changed by the introduction of an electrical control means from the Tauschek '030 Patent would undermine the exclusively mechanical nature of the design being described and claimed in the former. The electronic control means has certain advantages relative to a mechanical control means and certain disadvantages relative to a mechanical control means; in any case, it cannot simply be said to be an equivalent of the mechanical control means.

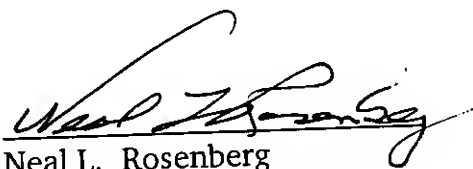
In view of the above amendments and remarks, reconsideration of the rejection and allowance of all claims is respectfully requested.

If an extension of time is required to enable this document to be timely filed and there is no separate Request for Extension of Time, this document is to be construed as also constituting a Request for Extension of Time Under 37 C.F.R. § 1.136(a) for a period of time sufficient to enable this document to be timely filed. Any fee required for such a Request for Extension of Time and any other fee required by this document pursuant to 37 C.F.R. §§ 1.16 and 1.17 and not submitted herewith should be charged to the Deposit Account of the undersigned attorneys, Account No. 01-1785; any refund should be credited to the same account. One copy of this document is enclosed.

Respectfully submitted,

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REDLINED VERSION OF AMENDED CLAIMS

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Rewrite Claims 1, 4, 5, 7-9 & 14-16 as follows:

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1. (Amended) A barrel assembly for a weapon, said barrel assembly

including:

a barrel;

a plurality of projectile assemblies axially disposed in end to end abutting relationship within said barrel for operative sealing engagement with the bore of the barrel, each projectile assembly including a projectile head and an integral cylindrical spacer portion extending axially and rearwardly from said projectile head;

discrete propellant charges accommodated within said cylindrical spacer portion for propelling respective projectile assemblies sequentially through the muzzle of the barrel;

ignition means for igniting said discrete propellant charges; and

electrical control means for selectively and sequentially actuating the ignition means.

4. (Amended) The barrel assembly as claimed in Claim 3 wherein the interior of the cylindrical spacer portion is structurally reinforced to prevent excessive radial expansion of the projectile assembly.

5. (Amended) A barrel assembly for a weapon, said barrel assembly including:

a barrel having a muzzle;

a plurality of projectile assemblies axially disposed in end to end abutting relationship within said barrel, each projectile assembly including a projectile head and a trailing cylindrical extension in close proximity with the barrel;

an internal wedging surface, at or adjacent the trailing end of said cylindrical extension which accommodates a tapered nose part of the following projectile assembly, for expanding said trailing end into enhanced sealing engagement with the barrel upon engagement of said wedging surface with said tapered nose part;

discrete propellant charges for propelling respective [projectiles] projectile assemblies sequentially through the muzzle of said barrel;

ignition means disposed externally of the barrel for igniting said discrete propellant charges; and

electrical control means for selectively and sequentially actuating said ignition means.

7. (Amended) The barrel assembly as claimed in either Claim 5 or Claim 6 wherein propellant charges surround the noses of respective following [projectiles] projectile assemblies externally of the trailing cylindrical extension.

8. (Amended) The barrel assembly as claimed in Claim 5 wherein each projectile assembly includes an internal spacer which extends through the trailing cylindrical extension from the projectile head to abut or cooperate with the inserted projectile head of a following projectile assembly, whereby axial compressive loads applied to a stack of abutting [projectiles] projectile assemblies arranged in sealing engagement within the barrel may be resisted.

9. (Amended) The barrel assembly as claimed in Claim 5 wherein axial compressive loads applied to a stack of abutting [projectiles] projectile assemblies arranged in sealing engagement within the barrel may be distributed back to said barrel from individual [projectiles] projectile assemblies through their engagement with the barrel.

14. (Amended) The barrel assembly as claimed in Claim 8 wherein, upon loading respective [projectiles] projectile assemblies into the barrel and thereafter causing an axial displacement of the [projectiles] projectile assemblies causes radial expansion of said trailing ends thereof to enhance the sealing engagement between the [projectiles] projectile assemblies and the barrel.

15. (Amended) The barrel assembly as claimed in Claim 14 wherein the axial displacement is suitably caused to said [projectiles] projectile assemblies individually, subsequent to each projectile assembly being loaded into the barrel.

16. (Amended) The barrel assembly as claimed in either Claim 14 or Claim 15 wherein the radial expansion into enhanced sealing engagement with the barrel is limited through engagement between the penetrating nose of a following projectile assembly and the internal spacer.